



Image Assessment System (IAS)

Critical Design Review

April 8, 1997

IAS Critical Design Review



Agenda

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|----------------------------------|--------------------------------|
| • Introduction | R. Schweiss |
| • Design Overview | S. Johnston |
| • Hardware Architecture | C. Brambora |
| • Operational Scenarios | S. Johnston |
| • Software Design | |
| – Overview | J. Hosler |
| – Operations Interface | J. Whelan |
| – Management and Control | A. Williard |
| – Database | A. Williard |
| – L1 Processing | T. Ulrich |
| | J. Storey |
| – Evaluation and Analysis | D. Kaufmann/M. Schienle |
| • System Test | E. Crook |
| • Conclusion | R. Schweiss |

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IAS Technical Review Panel



- **Ludie Kidd/L7 Implementation Manager (Chair)**
- **Jim Irons/Deputy Project Scientist**
- **Darla Werner/EDC L7 Ground System Manager**
- **Jim Ellickson/NOAA**
- **Bill Potter/ MOC Project Manager**
- **Kelly Jeletic/LPGS System Engineer**
- **Dan DeVito/ESDIS- L7 Interface Lead**



- **Introduction**

- **Presentation Purpose**
- **IAS CDR Documentation**
- **On-line Documentation**
- **IAS RIDS**
- **Events to Date / PDR Followup**
- **Purpose of IAS**
- **IAS Requirements Overview**
- **IAS Context Diagram**
- **Issues**

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Presentation Purpose

- **Purpose of review**
 - **Present a synopsis of the IAS Detailed Design Specification and related design material**
 - **Detailed Design encompasses:**
 - **Defining Detailed design for software and hardware CI's**
 - **Refining detailed inter-subsystem interfaces and external interfaces**
 - **Defining a detailed design for the operator-system interface**
 - **Defining a detailed design for the database**
 - **Refining operations scenarios**
 - **Performing further studies and prototypes to guide design**
 - **Defining final test plans**
 - **Documenting the above in specifications, ICDs, plans etc.**
- **CDR covers Design and Implementation/Integration approaches of entire IAS including parts managed and developed at EDC**

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IAS CDR Documentation



- **Accompanying Documentation**
 - IAS Detailed Design Specification
 - IAS Interface Definition Documentation
 - IAS-LPGS ICD
 - IAS System Integration and Test Plan
 - IAS Release Implementation Plan
 - IAS User's Guide (Preliminary)
 - IAS Calibration Parameter File Data Format Control Document
- **Reference Documentation**
 - Landsat 7 Data Format Control Document- Volume 5, Level 0R Output Product
 - Interface Control Document Between EOSDIS Core System (ECS) and the Landsat 7 System, 2/97



- **All IAS documentation and presentations are available for review and printing in PDF format on the IAS web server:**

<http://caster.gsfc.nasa.gov/IAS/>

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IAS RIDS

- **Please submit RIDS to Shaida Johnston no later than April 29, 1997**
 - **Submission can be made by using hard copy RID provided or via email. Please make sure all information necessary on the hard copy is provided on the email version.**
 - **Code 430, Building 16W**
 - **shaida.johnston@gsfc.nasa.gov**
- **Items to RID are:**
 - **Presentation Package**
 - **IAS Accompanying Documentation**

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Events to Dates / PDR Followup

- A formal IAS Preliminary Design Review was conducted in February 1996
 - All Rids from this review have been closed out
- IAS Project Management was restructured in July 1996
- Informal Delta IAS System Design Review/Preliminary Design Review was conducted December 1996
- Two independent software design reviews occurred the week of March 24, 1997 to review the Radiometric Processing System and Geometric Processing System software designs in detail.
 - No major issues were raised at the reviews

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Purpose of IAS

- **Primary IAS Tasks**
 - **Assess quality of LOR Products**
 - **Calibrate instrument and spacecraft**
 - **Support anomaly investigation**

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IAS Requirements Overview



- Retrieve Landsat 7 Level 0R products from the EDC DAAC
- Process the L0R products to produce radiometrically and geometrically corrected level 1R and 1G images
- Remove artifacts while processing L0R data to produce Level 1R images as required
- Assess, on a sample basis, the quality of ETM+ Level 0R products archived by the EDC DAAC
- Perform radiometric and geometric calibrations on selected L7 data
- Monitor and perform long-term trend analyses of system performance and image quality
- Send IAS Calibration Parameter File, problem reports, data quality assessments and processing parameters to the EDC DAAC

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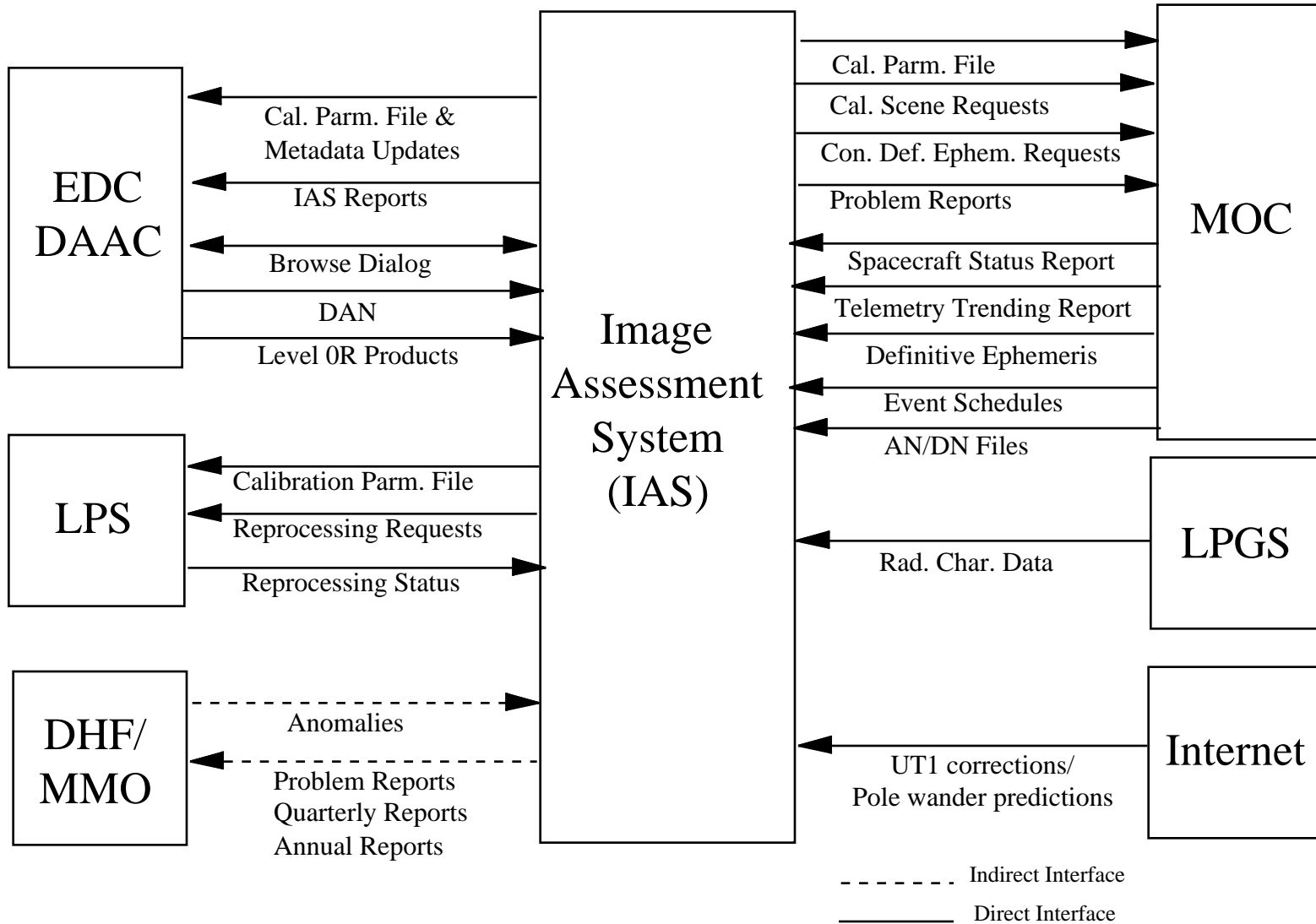
IAS Requirements Overview (cont.)

- **Provide the Calibration Parameter File to the LPS**
- **Receive necessary satellite and instrument performance data from the MOC**
- **Coordinate acquisition of ETM+ image data required for image quality assessment with the MOC**
- **Generate the equivalent of up to ten ETM+ Level 1G systematically correct scenes in a 24 hour day**
- **Produce calibration parameter file updates on an as needed basis (nominally quarterly)**
- **Sustain operations for at least 1 shifts per day, 5 days a week for a minimum mission life of 5 years**

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IAS Context Diagram



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Issues

- **Interface to EDC DAAC for receipt of Level 0R product**
 - Documentation on details for how the IAS receives the Level 0R product has not been available. Design is based on assumption that this is a fairly manual procedure
 - If documentation is located and a more automated approach can be accommodated in the release schedule, the design will be revisited
- **Interface to LPGS for receipt of trending data**
 - Physical connection between LPGS and IAS is not defined thereby leaving a design based on assumptions